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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,428	12/12/2003	Hariprasad Nellitheertha	JP920030192US1	2295
39903	7590	06/19/2006		
ANTHONY ENGLAND PO Box 5307 AUSTIN, TX 78763-5307			EXAMINER FRANKLIN, RICHARD B	
			ART UNIT 2181	PAPER NUMBER

DATE MAILED: 06/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/735,428	<b>Applicant(s)</b> NELLITHEERTHA, HARIPRASAD	
	<b>Examiner</b> Richard Franklin	<b>Art Unit</b> 2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 8-17 and 19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-17 and 19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

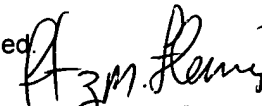
### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br/>Paper No(s)/Mail Date _____.</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)<br/>Paper No(s)/Mail Date. _____.</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input type="checkbox"/> Other: _____.</p> |
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**FRITZ FLEMING**  
 Supervisory PRIMARY EXAMINER  
 GROUP 2181  
 6/12/2006

### **DETAILED ACTION**

1. Claims 1 – 4, 8 – 17, and 19 have been examined.

### ***Response to Arguments***

2. Applicant's arguments, see pages 11 – 16, filed 07 April 2006, with respect to the rejection(s) of claim(s) 11 – 15 under 35 USC 102(e) and 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view applicant's arguments and amendments.

### ***Claim Objections***

3. Claims 1, 9, and 17 are objected to because of the following informalities:
  - a. In claim 1, the steps go from step "b" to step "d" with no step "c." Step "d" should be changed to step "c."
  - b. In claim 9, either the word "said" or "the" should be removed from the phrase "wherein *said the* set of heuristic variables includes" in the first and second lines of the claim.
  - c. In claim 17, the word "the" should be moved to between "wherein" and "computer" in the phrase "*the* wherein computer program code means for mapping includes" in line 15 of the claim.

Appropriate correction is required.

***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1 – 4, 8 – 17, and 19 are rejected under 35 U.S.C. 101 because the claims fail the practical application test. The claims recite data transformation per se with no tangible result.

As per claims 1 – 4, 17, and 19, the claims recite non-statutory subject matter that is directed solely to data transformation with no claimed tangible result. The result of the claims appear to be a thought (selection) or a mere computation within a processor rather than a real world tangible result that is a practical application of the abstract idea of “selecting.”

Claims 8 – 10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

It would be reasonable to interpret the system of claim 8 to be software per se, since the specification describes the system as a software system. Software per se, is not considered statutory subject matter. Since the claim could reasonably be interpreted as describing software, it does not include patent-eligible subject matter.

Claims 11 – 15 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Applicant has given a clear definition to of "*an operating system kernel*" to be **software** (Applicants Remarks Submitted 04/07/2006; Page 14). Also, "The Authoritative Dictionary of IEEE Standards Terms" defines a "kernel" to consist of only software. Software per se, is not considered statutory subject matter. Since the claim only describes software, it does not include patent-eligible subject matter.

Claim 16 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Since applicant has not given a clear definition of a "module" in the specification, it would be reasonable to interpret the modules of claim 16 to be software per se, since the specification describes the system as a software system. Software per se, is not considered statutory subject matter. Since the claim could reasonably be interpreted as describing software, it does not include patent-eligible subject matter.

Claims 17 and 19 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

While Applicant has not provided an explicit and deliberate definition in the specification or explicitly stated in the claim that the "software program product" is the combination of the software code and a computer readable medium in which the software is recorded, the claim when taken as a whole is not believed to reasonably be interpreted as software, per se, since it states that the software code is recorded in the software program product. However, it's unclear whether Applicant intends for the

product to reasonably be interpreted by one of ordinary skill in the art as a signal, wave or other form of energy. If so, the claim covers an embodiment that fails to include patent-eligible subject matter, since signals waves or other forms of energy are not deemed to fall within a statutory category of invention. Given this confusion, the claim is considered indefinite under 35 U.S.C. 112, 2nd, and non-statutory under 35 U.S.C. 101. Clarification of Applicant's intent and/or correction is required.

***Claim Rejections - 35 USC § 112 1<sup>st</sup> Paragraph***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 11 – 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 11 – 15 recite improper “means plus function” claim language and is not a proper invocation of 35 U.S.C. 112, 6<sup>th</sup> paragraph. In order to invoke 112 6<sup>th</sup> paragraph, the specification must set forth the corresponding structure or equivalents thereof of what the claim covers (See MPEP § 2181). The specification of the current application sets forth the structure as “*an operating system kernel*,” which is defined as software per se (see rejection of claims 11 – 15 under 35 U.S.C. 101 above). However, it has

been determined that software per se does not constitute a structure and is not patentable under 35 U.S.C. 101. Therefore, the structure of the "means plus function" language is not clear or understandable and is not described in the specification.

***Claim Rejections - 35 USC § 112 2<sup>nd</sup> Paragraph***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 8 – 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 8 – 10 are indefinite because the preamble of the claim recites a "computing system," but the body of the claims recites only software with no computing system. The claim is therefore indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regards as the invention.

Claim 9 recites the limitation "the set of heuristic variables" in lines 1 and 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

The Examiner has interpreted the limitation to refer to the "first, second and third heuristic variables" that are described in claim 8.

Claims 11 – 15 recite improper “means plus function” claim language and is not a proper invocation of 35 U.S.C. 112, 6<sup>th</sup> paragraph. In order to invoke 112 6<sup>th</sup> paragraph, the specification must set forth the corresponding structure or equivalents thereof of what the claim covers (See MPEP § 2181). The specification of the current application sets forth the structure as “*an operating system kernel*,” which is defined as software per se (see rejection of claims 11 – 15 under 35 U.S.C. 101 above). However, it has been determined that software per se does not constitute a structure and is not patentable under 35 U.S.C. 101. Therefore, the structure of the “means plus function” language is not clear or understandable.

Claim 15 recites the limitation “said activating means” in lines 1 and 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

The Examiner has interpreted the claim to be dependent upon claim 12, which provides for the proper antecedent basis of “an activating means.”



***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 11 – 14 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,904,470 (hereinafter Ofer).

As per claim 11, Ofer teaches a means for maintaining a predetermined set of values associated with a plurality of I/O schedulers (Figures 5, and 7 – 10); means for monitoring heuristics associated with jobs performed in the computing system (Figure 6, Col 9 Lines 8 – 28); and means for comparing the monitored heuristics with the predetermined set of values to select one of the plurality of I/O schedulers (Figure 6, 8, 10, Col 7 Lines 17 – 19).

As per claim 12, Ofer also teaches a means for activating the selected I/O scheduler (Figure 3 Item 60, Figure 6 Items 165 and 180).

As per claim 13, Ofer also teaches selecting a default I/O scheduler (read sub-scheduler) from the plurality of I/O schedulers when the monitored heuristic does not match a set of desired heuristics (Col 8 Line 66 – Col 9 Line 7).

As per claim 14, Ofer also teaches wherein the monitored heuristic is the proportion of read requests to write requests (Figure 5, Col 7 Lines 40 – 46).

As per claim 16, Ofer teaches an I/O scheduler (Figure 3 Item 60); a hardware device driver for executing job requests received from the operating system (Figure 2 Items 44a and 44b); a heuristics monitor (Figure 6; Col 9 Lines 8 – 28); and a switch (Figures 6, 8, and 10, Col 7 Lines 17 – 19) for comparing the analyzed information with predetermined sets of heuristic values and for switching the active I/O scheduler to a selected one of the I/O schedulers, wherein the selected one of the I/O schedulers corresponds to the identified one of the mutually exclusive sets of heuristic values (Figure 6 Item 178).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,904,470 in view of Structured Computer Organization Second Edition by Andrew S. Tanenbaum (hereinafter Tanenbaum).

As per claim 15, Ofer teaches the computer system as described per claim 11 (see rejection of claim 11 above).

Ofer does not teach wherein the activating means is a daemon (software component).

However, Tanenbaum teaches wherein software and hardware are logically equivalent (Tanenbaum; Page 11 Lines 4 – 18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the teachings of Ofer to implement the activating means as a daemon (software component) because implementing functions in software and not hardware addresses considerations such as cost, speed, reliability, and frequency of expected changes (Tanenbaum; Page 11 Lines 10 – 18).

### ***Allowable Subject Matter***

9. Claims 1 – 4, 8 – 10, 17, and 19 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 101, 35 U.S.C. 112 1<sup>st</sup> Paragraph, and 35 U.S.C. 112 2<sup>nd</sup> Paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

Claims 1 – 4, 8 – 10, 17, and 19 are indicated as allowable because the prior art of record fails to teach or suggest alone or in combination two of the three heuristic variables, the ***first variable being for a number of I/O job requests as a proportion***

**of a total number of processes requesting I/O jobs, the third variable being for an average disk seek distance of submitted job requests** (emphasis added), and wherein a first one of the heuristic sets defined a first performance state of the computing system, wherein a certain predefined high proportion of read operations is exceeded for the second variable and a certain predefined average seek distance is not exceeded for the third variable, a second one of the heuristic sets defines a second performance state of the computing system, wherein a certain predefined high level of I/O job requests per process is exceeded for the first variable, a certain predefined low proportion of read operations is not exceeded for the second variable, and the certain predefined average seek distance is not exceeded for the third variable, and a third one of the heuristic sets defines a third performance state of the computing system, wherein the certain predefined high level of I/O job requests per process is exceeded for the first variable and the certain predefined low proportion of read operations is exceeded but the certain predefined high proportion of read operations is not exceeded for the second variable; and wherein the mapping includes associations among respective first, second and third ones of the heuristic sets and first, second and third ones of the input/output schedulers, as required by independent claims 1, 8, and 17, **in combination with the other claimed limitations** (emphasis added). Cited reference US Patent No. 6,904,470 (hereinafter Ofer) teaches a heuristic variable that is the number of read operations as a proportion of the total number of read and write operations. Ofer, however, is silent on other variables for a proportion of a total number of processes requesting I/O jobs, and for an average disk seek distance of submitted job requests.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Franklin whose telephone number is (571) 272-0669. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fritz Fleming can be reached on (571) 272-4145. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Richard Franklin  
Patent Examiner  
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